WHAT IS CLAIMED IS:

1. An optical element comprising:

a central axis;

a first curved surface extending in a transverse direction with respect to the central axis;

a second curved surface extending in the transverse direction with respect to the central axis; and

a peripheral surface extending between the first curved surface and the second curved surface;

wherein light is refracted from the time when light is incident on the first curved surface to the time when the light is emitted from the second curved surface, and thereby a light intensity distribution of the light emitted from the second curved surface and a light intensity distribution of the light incident on the first curved surface are different from each other, and

a rim intensity improvement rate R, which is a ratio of rim intensity of the emitted light with respect to rim intensity of the incident light is 1.07 or more and 1.5 or less, in which rim intensity represents a ratio of the central intensity to the peripheral intensity.

2. The optical element according to claim 1, wherein when a distance (central thickness) between the central position of the first curved surface and the central position of the second curved surface is d (mm), d satisfies the following relationship:

$$d \geq 54 \cdot R^4 - 221 \cdot R^3 + 304 \cdot R^2 - 138 \cdot R.$$

3. An optical head for recording or reproducing a signal with respect to an optical recording medium, the optical head comprising:

a light source for emitting light; and

an objective lens for converging the light emitted from the light source on the optical recording medium;

wherein the optical element according to claim 1 is disposed between the light source and the objective lens.

4. The optical head according to claim 3, further comprising a spherical aberration correction means provided for correcting a spherical aberration that occurs due to a deviation of the thickness of a base material of the optical

recording medium from the standard value.

5. The optical head according to claim 4, further comprising a lens disposed at a predetermined space with respect to the optical element, wherein the spherical aberration correction means comprises the lens, the optical element and a space changing means for changing a space between the optical element and the lens in order to correct the spherical aberration.

6. The optical head according to claim 5, wherein the lens converts light diverged by the optical element into parallel light.

7. The optical head according to claim 3, further comprising a beam shaping optical element disposed between the optical element and the light source for beam-shaping of the light emitted from the light source.

8. The optical head according to claim 3, wherein when a distance (central thickness) between the central position of the first curved surface and the central position of the second curved surface is d (mm), d satisfies the following relationship:

$$d \geq 54 \cdot R^4 - 221 \cdot R^3 + 304 \cdot R^2 - 138 \cdot R.$$

9. The optical head according to claim 5, wherein the lens comprises a convex lens disposed at the side of the optical element and a concave lens disposed at the side of the objective lens and having an Abbe constant that is smaller than an Abbe constant of the convex lens.

10. The optical head according to claim 4, wherein the spherical aberration correction means is an expanding system.

11. The optical head according to claim 4, wherein the spherical aberration correction means has a chromatic aberration correction function.

12. The optical head according to claim 5, wherein at least one of the optical element and the lens has a chromatic aberration correction function.

13. The optical head according to claim 4, wherein the spherical aberration correction means comprises the optical element, a diffractive lens disposed at

a predetermined space with respect to the optical element, and a space changing means for changing a space between the optical element and the diffractive lens in order to correct the spherical aberration.

14. The optical head according to claim 13, wherein the diffractive lens converts light diverged by the optical element into parallel light.

15. The optical head according to claim 3, further comprising a chromatic aberration correction element having a chromatic aberration correction function.

16. The optical head according to claim 3, wherein the NA of the objective lens is 0.7 or more.

17. The optical head according to claim 3, wherein the wavelength of the light emitted from the light source is 380 nanometers (nm) or more and 420 nanometers (nm) or less.

18. The optical head according to claim 4, further comprising: a deviation detector for detecting a deviation of the thickness of a base material of the optical recording medium from the standard value.

19. The optical head according to claim 4, further comprising:

a lens disposed at a predetermined space with respect to the optical element; and

a deviation detection means for detecting a deviation of the thickness of a base material of the optical recording medium from the standard value;

wherein the spherical aberration correction means comprises the lens, the optical element and a space changing means for changing a space between the lens and the optical element in order to correct the spherical aberration based on the detected deviation of the base material.

20. A method for correcting a spherical aberration, which uses an optical head according to claim 5, the method comprising:

detecting a deviation of the thickness of a base material of the optical recording medium from the standard value; and

changing a space between the optical element and the lens in order to

correct the spherical aberration based on the detected deviation of the base material.

21. The method for correcting a spherical aberration according to claim 20, wherein in the changing a space, the lens is moved in order to change a space between the optical element and the lens.

22. An optical recording/reproducing apparatus comprising:

an optical head according to claim 3; and

a processing circuit provided for controlling the position of the objective lens provided in the optical head so that the light is converged on a desirable track on the optical recording medium based on a focus error signal and a tracking error signal produced by the optical head.